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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,242	06/27/2003	Lawrence B. Kilham	Kilham 1	8593

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EXAMINER	
ROGERS, DAVID A	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/608,242	KILHAM, LAWRENCE B.	
	Examiner	Art Unit	
	David A. Rogers	2856	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States,

2. Claims 9, 10, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent 5,646,336 to Thompson *et al.*

The applicant's intended use being a stripping chamber for a liquid with a dissolved gas component is not given any patentable weight. The use of this type of liquid does not patentably distinguish over the prior art of Thompson *et al.* See *In re Schreiber*, 128 F.3d 1473, 44 USPQ2d 1429 (Fed. Cir. 1997)[1].

Thompson *et al.* discloses an apparatus for stripping volatile materials from a liquid utilizing a stripping chamber (reference item 60). A pressurized inert carrier gas supply, e.g. helium (reference item 40) is introduced into the chamber at a predetermined flow rate and pressure (column 4, lines 8-15). A pump (reference item 30) is connected to the chamber and is used to pump the

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[1] Prior art patent disclosing conical spout for open-ended containers, which contains all structural limitations recited in application claims for conical dispensing top for popped popcorn, anticipates application claims even though it does not address use of disclosed structure to dispense popcorn, since recitation of new intended use for old product does not make claim to that old product patentable, and since applicant's contention that claimed structure will be used to dispense popcorn thus does not have patentable weight if structure is already known, regardless of whether it has ever been used in any way in connection with popcorn.

liquid, e.g. water (reference item 210) into the chamber via a nozzle (reference item 210). The diameter of the nozzle, hereinafter referred to as D, is $0.005\ in. \leq D \leq 0.007\ in.$, which converts to approximately $0.127\ mm \leq D \leq 0.178\ mm$. Once atomized the volatiles are in a vapor phase and transferred to a gas detector, e.g. a mass spectrometer (reference item 50) using the carrier gas. Mass spectrometers are well known to provide constituent concentration results from their analyses. The remaining liquid is continuously withdrawn from the chamber via an outlet connected to a p-trap (not numbered - but shown in figure 1).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 8-10, 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,646,336 to Thompson *et al.* in view of United States Patent 5,357,781 to Tikijian and United States Patent 5,258,057 to Baycut.

Thompson *et al.* teaches a method for stripping volatile materials from a liquid utilizing a stripping chamber (reference item 60). A pressurized inert carrier gas supply, e.g. helium (reference item 40) is introduced into the

chamber at a predetermined flow rate and pressure (column 4, lines 8-15). A pump (reference item 30) is connected to the chamber and is used to pump the liquid, e.g. water (reference item 210) into the chamber via a nozzle (reference item 210). The diameter of the nozzle is $0.005\,in. \le D \le 0.007\,in.$, which converts to approximately $0.127\,mm \le D \le 0.178\,mm$. Once atomized the volatiles are in a vapor phase and transferred to a gas detector, e.g. a mass spectrometer (reference item 50) using the carrier gas. Mass spectrometers are well known to provide constituent concentration results from their analyses. The remaining liquid is continuously withdrawn from the chamber via an outlet connected to a p-trap (not numbered - but shown in figure 1). Thompson *et al.*, however, does not teach a method for measuring the gas content of a gas that was entrained in a liquid.

Tikijian teaches that it is known to use a stripping chamber (reference item 30) to remove the gas entrained in a liquid. In this apparatus a liquid with an entrained gas is introduced into the chamber and is agitated using agitating means (reference item 82). The gas entrained in the liquid is released and is carried to a sensor (reference item 40) via a pump (reference item 38).

Adapting the method of Thompson *et al.* so as to use a liquid with an entrained gas, as taught by Tikijian, would involve only routine skill in the art. Furthermore, the apparatus of Thompson *et al.* would be preferred over the device of Tikijian in a method to strip gas from a liquid as the nozzle's orifice, being a very small diameter, would increase the total amount of surface area of

the liquid sample so that more of the entrained gas is released into the carrier gas resulting in more accurate results. Also, the nozzle atomizes the entire liquid sample, whereas in the device used by Tikijian only a small portion of the sample is agitated. See also Baykut, column 3, lines 17-32, where the benefits of using the nozzle approach are discussed.

With regard to claim 16 Thompson *et al.* teaches the use of a nozzle with an orifice for injection a sample into a stripping chamber. Thompson *et al.* does not teach the specific material for the manufacture of the nozzle. The use of a stainless steel or plastic nozzle is an obvious design choice as these materials are known to be non-reactive and will not cause erroneous readings with the sensor. See MPEP 2144.07 and *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960)[2]. Furthermore, enlarging the orifice of Thompson *et al.* from a nominal range of $0.127\ mm \leq D \leq 0.178\ mm$ to a nominal range of $0.250\ mm \leq D \leq 1.000\ mm$ would involve only routine skill in the art. See In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984)[3].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Thompson *et al.* with the teachings

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[2] ...selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious

[3] The Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

of Tikijian and Baykut to obtain a method and apparatus for detecting gas in a liquid using a stripping chamber and a nozzle.

5. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson *et al.* in view of Tikijian and Baykut as applied to claims 1 and 9 above, respectively, and further in view of United States Patent 6,235,207 to Conrad.

Thompson *et al.* in view of Tikijian teaches that it is known to use a stripping chamber to remove gas from a liquid in order to detect the concentration of gas that was in the liquid. Thompson *et al.* in view of Tikijian does not teach the detection of ozone (O_3) in water.

Conrad teaches that (emphasis added):

> "U.S. Pat. No. 5,683,576 to Olsen describes an apparatus for treating contaminated water by passing ozone through the water. In the system disclosed by Olsen, an ozone containing gas is passed through the water to be treated, until the instantaneous concentration of ozone in the head space above the water being treated reaches a predetermined level. Then, the flow of ozone through the water continues for a predetermined period of time."

and

> "*The amount of ozone which must be passed through the water to purify it to any particular state will vary depending upon the initial quality of water to be treated. For example, untreated well or lake water may require a higher degree of purification than treated city water which has previously been treated to some degree.*"

Clearly, the concentration of the gas, e.g. ozone, in the liquid is critical to the treatment of water. Knowing the concentration of ozone in the water can assist

one in determining if the water was sufficiently treated. This is the same teaching as found in the applicant's disclosure (see page 2, lines 2-7).

Conrad also teaches the gas (ozone) is "converted into an innocuous by-product such as oxygen" (column 7, lines 35-37) after passing through the sensor. In the case of Thompson *et al.* it would be preferred to convert or otherwise destroy any volatile organic compounds or other hazardous materials, including those disclosed such as toluene, benzene, methyl ethyl ketone (MEK), trichloroethane (TCA), dichloroacetic acid (DCA), xylenes, ethylbenzene, and C2-benzenes, by a converter located downstream of the sensor so that these compounds do not enter the environment as required by numerous state and federal regulations.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Thompson *et al.* in view of Tikijian and Baykut with the teachings of Conrad in order to use a stripping chamber to determine the concentration of ozone in a liquid such as water and then use a converter located downstream of the gas sensor to convert the ozone to oxygen.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson *et al.* in view of Tikijian, Baycut, and Conrad as applied to claims 1 and 5 above, and further in view of United States Patent 4,154,086 to Button *et al.*

With regard to claim 6 the use of air as the carrier gas would have been an obvious choice in the detection of ozone in water as it is readily available in unlimited supply and is generally non-reactive in the presence of ozone. Air is about 78% inert nitrogen, 21% oxygen, and 0.9% argon. Air, however, also has trace amount of other elements/compounds including ozone (approximately 0.07 ppm) which would be easily accounted for in a baseline calibration of the sensor. Furthermore, Button *et al.* teaches a device for detecting volatile organics in water. Button *et al.* specifically teaches that (emphasis added):

> "The incoming carrier gas may be sparged into the water by means similar to that shown for the incoming water sample. *The carrier gas is selected to accommodate the detection system*. For example, an inert gas such as nitrogen is employed if the detection means employs a gas chromatograph, whereas if a detection device which burns the organic compound is employed, then an oxygen containing gas, such as air, is employed. Carrier gas rates are generally in the range of 0.1 to 10.0 cubic feet per hour."

The carrier gas flow rate, hereinafter referred to as FR_{cg}, as taught by Button *et al.*, is given as $0.1\frac{ft^3}{hr} \le FR_{cg} \le 10.0\frac{ft^3}{hr}$. Knowing that 1 cubic foot = 28.317 liters, one can easily convert the flow rate to show that it is approximately $0.047\frac{l}{min} \le FR_{cg} \le 4.719\frac{l}{min}$, which includes the claimed rate of $3.0\frac{l}{min}$.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Thompson *et al.* in view of Tikijian

and Conrad with the teachings of Button *et al.* to use stripping chamber where the carrier gas is air with $FR_{cg} = 3.0 \frac{l}{min}$.

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson *et al.* in view of Tikijian as applied to claim 9 above, and further in view of "Model A15/79 Gas Phase Measurement of Total Residual Chlorine" to Analytical Technology, Inc. (ATI).

Thompson *et al.* in view of Tikijian teaches that it is known to use a carrier gas to transfer a gas released from a liquid in a stripping chamber. In particular, Thompson *et al.* in view of Tikijian teaches that the carrier gas is stored in a pressurized housing. Thompson *et al.* in view of Tikijian does not teach the use a pump to move the carrier gas into the stripping chamber.

ATI teaches an apparatus for measuring chlorine in liquids such as water. The apparatus utilizes air as the carrier gas. A pump, such as a diaphragm pump with precision flow control, is used to move the carrier gas to the stripping chamber. A pressurized chamber with a pressure regulator (as taught by Thompson *et al.*) is functionally equivalent to the diaphragm pump with flow control since both operate to deliver the gas at a predetermined pressure and/or flow rate.

It would have been obvious to modify the teachings of Thompson *et al.* in view of Tikijian with the teachings of ATI to obtain a stripping chamber for gas

detection where a carrier gas such as air is delivered to the chamber using a diaphragm pump.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0630 - 1500).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SUPERVISORY PATENT EXAMINER
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12 May 2004